



2011 GEO-EDU

Jeju Island, 27-31 Oct.

Songnisan, 19 Nov.

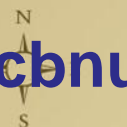
Seoraksan, 9.30-10.3

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Information of field trip


Food, accommodation and travel expenses during field trip will be shouldered by the organizer

Preparation: Hiking boots, mountain-climbing clothes, sun cream, hat, pencil, note, camera, computer, sunglasses, wind jacket

Weather: 5-15°C, Rain or bright

Welcome to Seoraksan





Seoraksan National park was designated the 5th national park in Korea in 1970 and also internationally recognized for its rare species. Seoraksan was designated as a Biosphere Preservation District by UNESCO in 1982.

The total area of Seoraksan National park is about 400 km² and it is divided two regions; Naeseorak and Oeseorak. Seoraksan has a total of 30 imposing peaks.

Over 2,000 animal species live in Seoraksan, including the Korea goral, Musk deer and others. There are also more than 1,400 rare plant species, such as the Edelweiss, here as well.

1st day, Field Trip Schedule of Seoraksan

Seoraksan; October 28

Time	Student Agenda	Location
Oct. 28, 8:00	Departure to Seoraksan	CBNU
Oct. 28, 11:00 -17:30	Investigation of granite, banded gneiss, schist, porphyroblastic gneiss, granitic gneiss, augen gneiss, quartz, feldspar, biotite, weathering and erosional surface and geography of Seoraksan	Hangyeryeong Information Center to Daecheongbong
Oct. 28, 17:30 -19:30	Dinner and free time	Daecheongbong Cabin
Oct. 28, 19:30 -21:30	Presentation and discussion	Daecheongbong Cabin
Oct. 28, 21:30	Free time	Daecheongbong Cabin

2nd day, Field Trip Schedule of Seoraksan

Seoraksan; October 29

Time	Student Agenda	Location
Oct. 29, 8:00	Departure to Daecheongbong	Daecheongbong Cabin
Oct. 29, 8:00 -18:30	Investigation of granite, banded gneiss, schist, porphyroblastic gneiss, migmatite, granitic gneiss, augen gneiss, quartz, feldspar, biotite and geography of Seoraksan	Daecheongbong to Sinheungsa Temple
Oct. 29, 18:30 -19:30	Dinner and free time	Sinheungsa Temple Stay
Oct. 29, 19:30 -21:30	Presentation and discussion	Sinheungsa Temple Stay
Oct. 29, 21:30	Free time	Sinheungsa Temple Stay

3rd day, Field Trip Schedule of Yeongwol

Seoraksan and Yeongwol; October 30

Time	Student Agenda	Location
Oct. 30, 8:00	Departure to Yeongwol	Sinheungsa
Oct. 29, 12:00 -15:30	Investigation of geologic and sedimentary structures, fossils, meandering river and geography of Yeongwol area	Yeongwol
Oct. 29, 15:30 -16:30	Jangneung history and culture	Yeongwol
Oct. 29, 18:30 -20:30	Dinner and free discussion	Cheongju
Oct. 29, 20:30	Free time	CBNU

Geographic Map and Hangyeryeong Pass Course



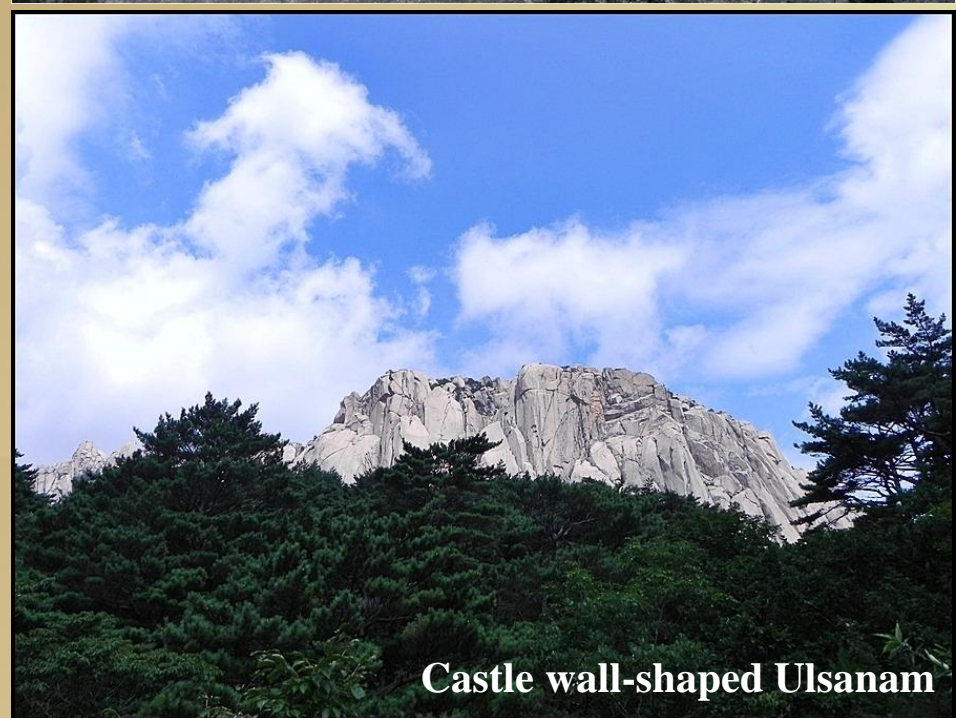
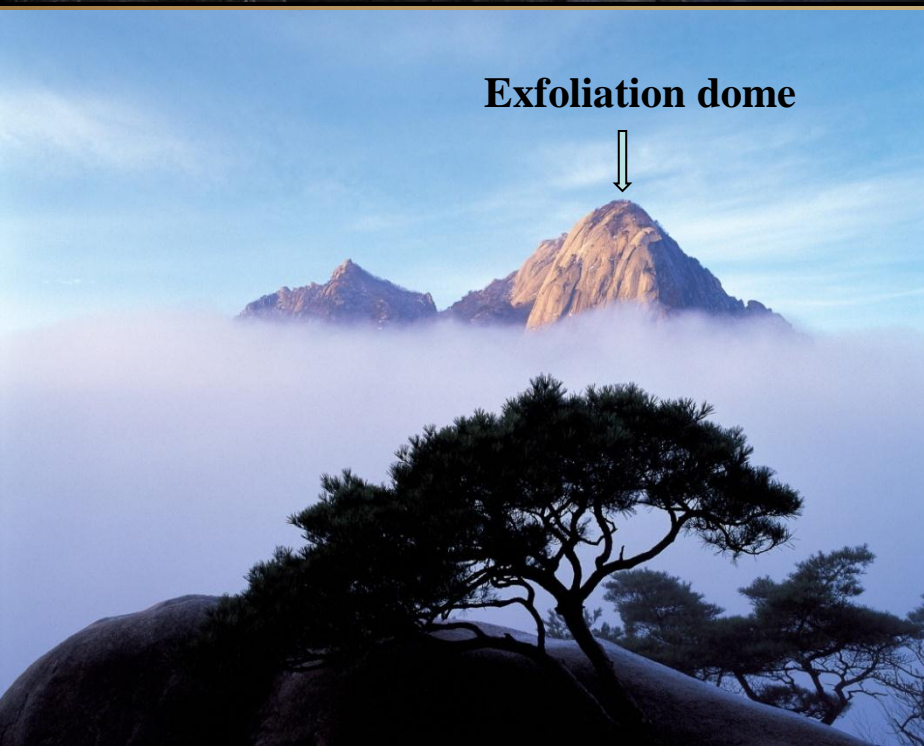
Hangyeryeong Pass Course

Travel Time : 13 hours 20 minutes
Distance : 19.3 km
Altitude : 1,000 m

Big Mass of Ulsanam Granite



In the Seoraksan, there are many rocky peaks which are all composed of granite or gneiss. The peaks are well-exposed with some weathering evidences; exfoliation dome, castle koppie, tor and panhole(weathering pan or solution pan). The Ulsanam is the best of the Seoraksan peaks in the view of spectacle, weathering evidences and scale.



Geologic Sequence of Rocks and Strata in Seoraksan

Geologic age		Name	Relation
Cenozoic Era	Quaternary Period	Alluvium	Unconformity
	Tertiary Period	Dilluvium	Unconformity
Mesozoic Era	Cretaceous Period	Granite Porphyry	Intrusion
		Ulsan Granite	Intrusion
		Masanite	Intrusion
		Pinkish Granite	Intrusion
		Jeombongsan Granite	Intrusion
		Biotite Granite	Intrusion
		Seoraksan Granite	Intrusion
		Hornblend Granite	Intrusion
		Seoraksan Formation	Unconformity
Precambrian		Gneiss Complex	

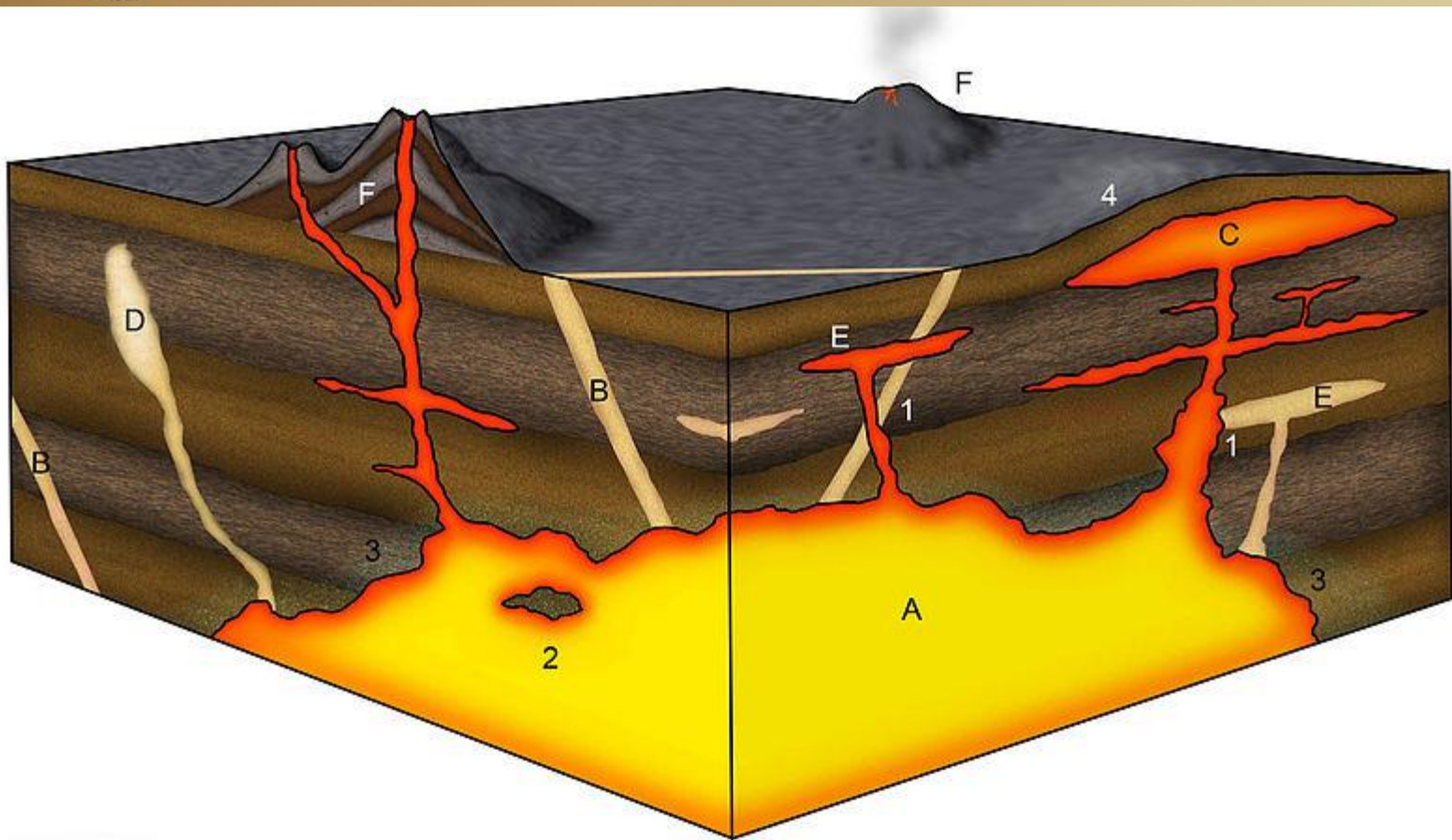
Porphyritic Granite including feldspar porphyry(left) Granodiorite(right)



Occurrences and Processes of Igneous Rock

Occurrences: A = magma chamber(batholith); B = dike; C = laccolith; D = pegmatite; E = sill; F = stratovolcano

Processes: 1 = newer intrusion cutting through older one; 2 = xenolith; 3 = contact metamorphism; 4 = uplift due to laccolith emplacement



Basic Classification of Igneous Rock

Volcanic: Rhyolite

Dacite

Andesite

Basalt

Komatiite

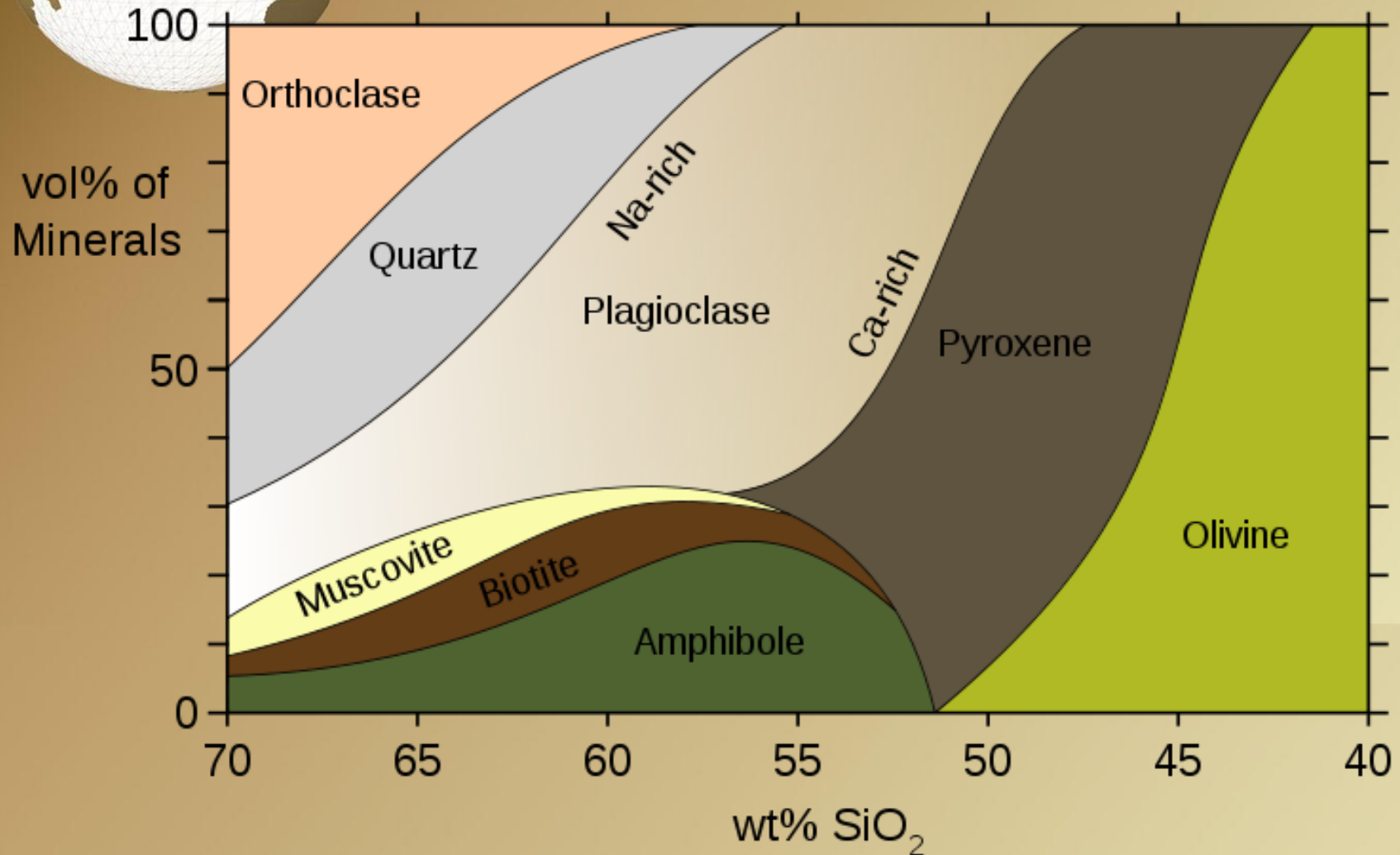
Plutonic: Granite

Granodiorite

Diorite

Gabbro

Peridotite



Two types of Seoraksan Gneiss Complex

Left: Porphyroblastic Gneiss including feldspar crystals

Pressure < Temperature

Right: Augen Gneiss

Pressure > Temperature



Types of Metamorphism



Regional metamorphism

Important factor: Pressure and temperature

Regional metamorphism occurs large areas of continental crust typically associated with mountain ranges, particularly subduction zones.

Contact metamorphism

Important factor: Temperature >> pressure

Contact metamorphism occurs typically around intrusive igneous rocks as a result of the temperature increase caused by the intrusion of magma into cooler country rock.

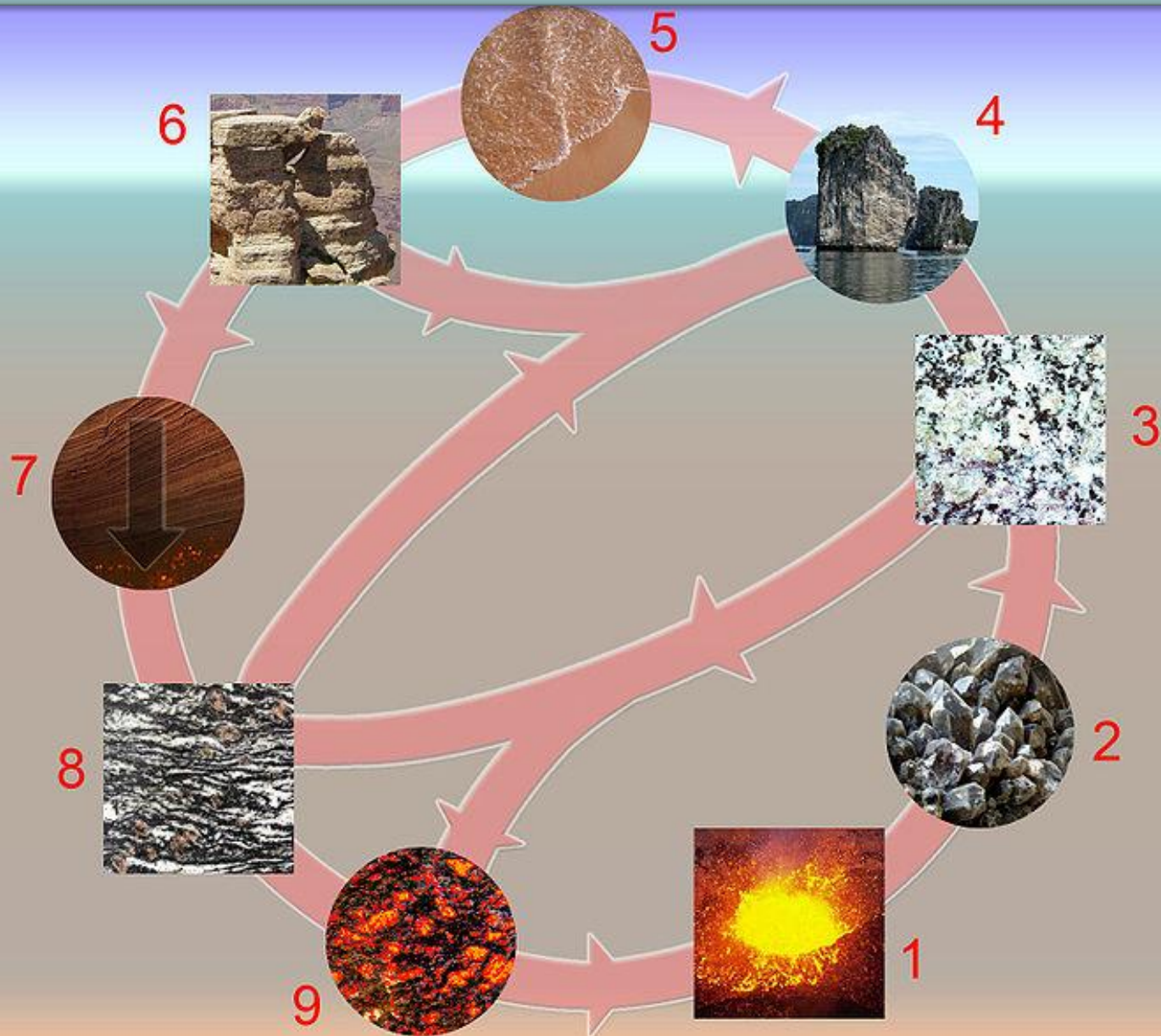
Dynamic metamorphism

Important factor: Pressure >> Temperature

Dynamic metamorphism is associated with zones of high to moderate strain such as fault zones. Cataclasis, crushing and grinding of rocks into angular fragments, occurs in dynamic metamorphic zones, giving cataclastic texture.

Rock Cycle

1 = magma; 2 = crystallization (freezing of rock); 3 = igneous rocks; 4 = erosion; 5 = sedimentation; 6 = sediments and sedimentary rocks; 7 = tectonic burial and metamorphism; 8 = metamorphic rocks; 9 = melting



Types of Volcanic Rock



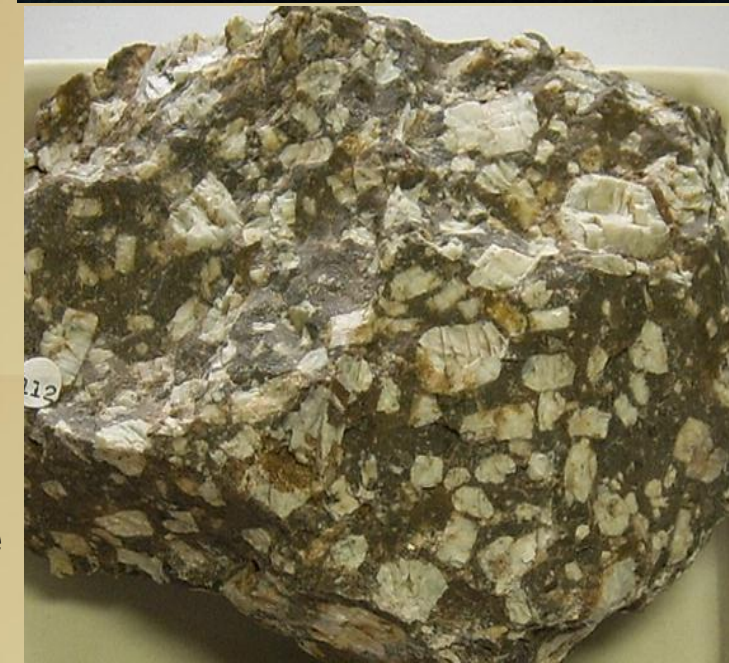
Rhyolite



Andesite



Basalt



Trachyte

Types of Intrusive Rock



Gabbro



Diorite

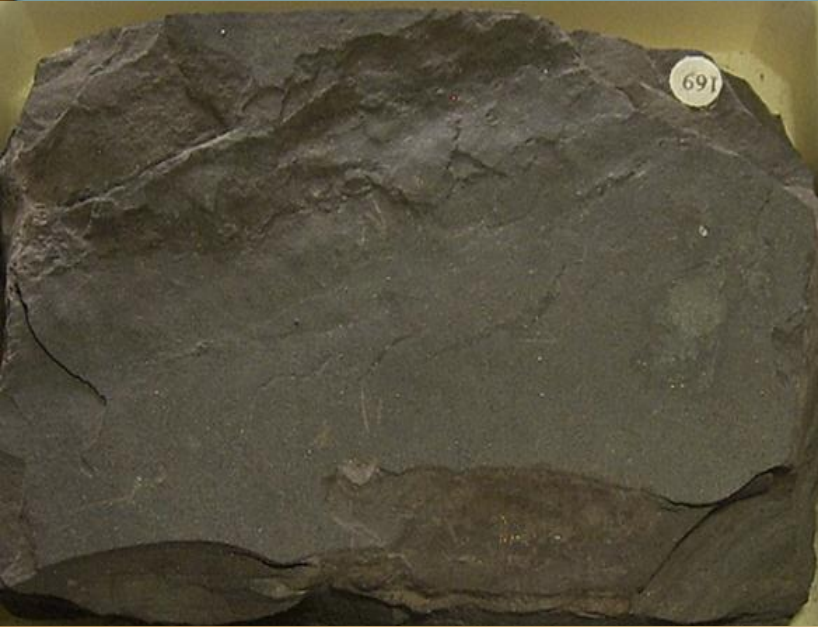


Granite



Pegmatite

Types of Metamorphic Rock (I)



Hornfels



Marble

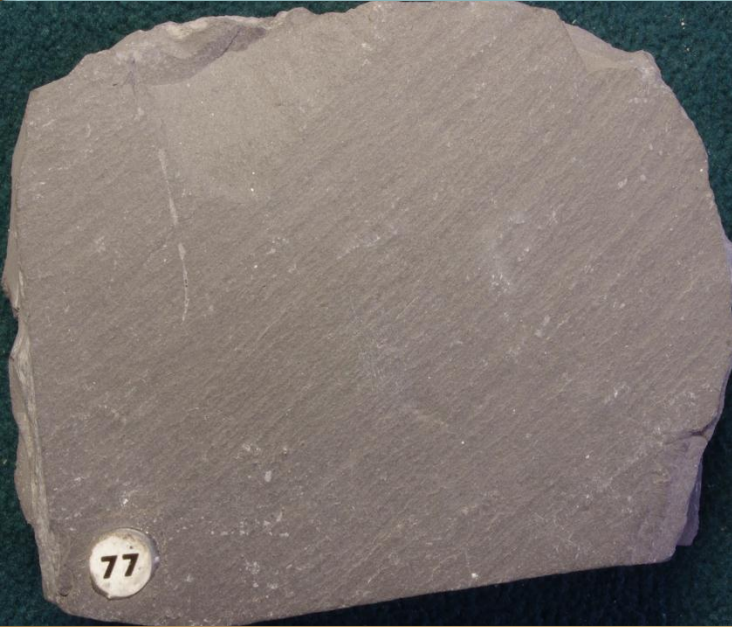


Cataclastic
Rock



Migmatite

Types of Intrusive Rock (II)



Slate



Schist

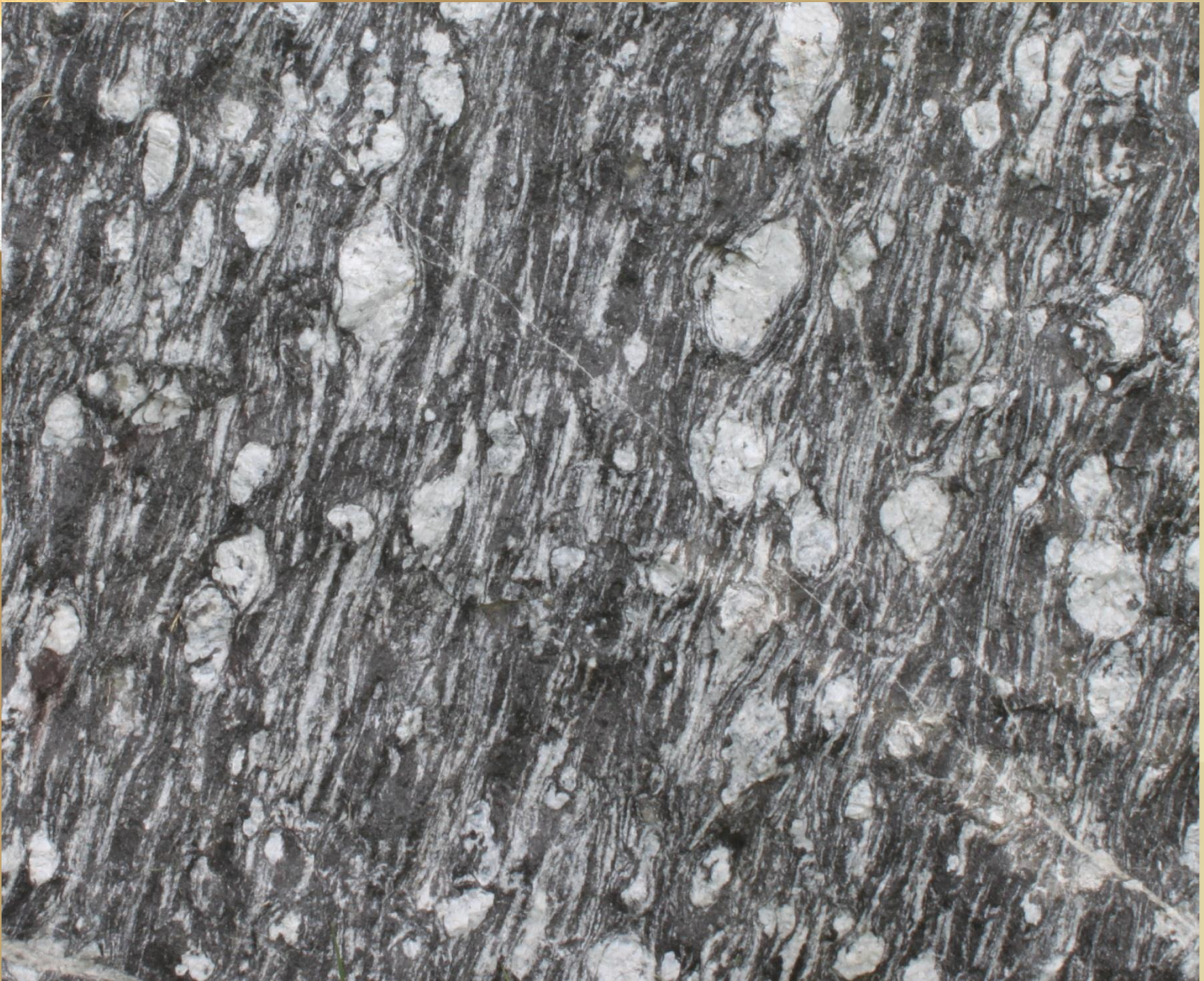


Phyllite

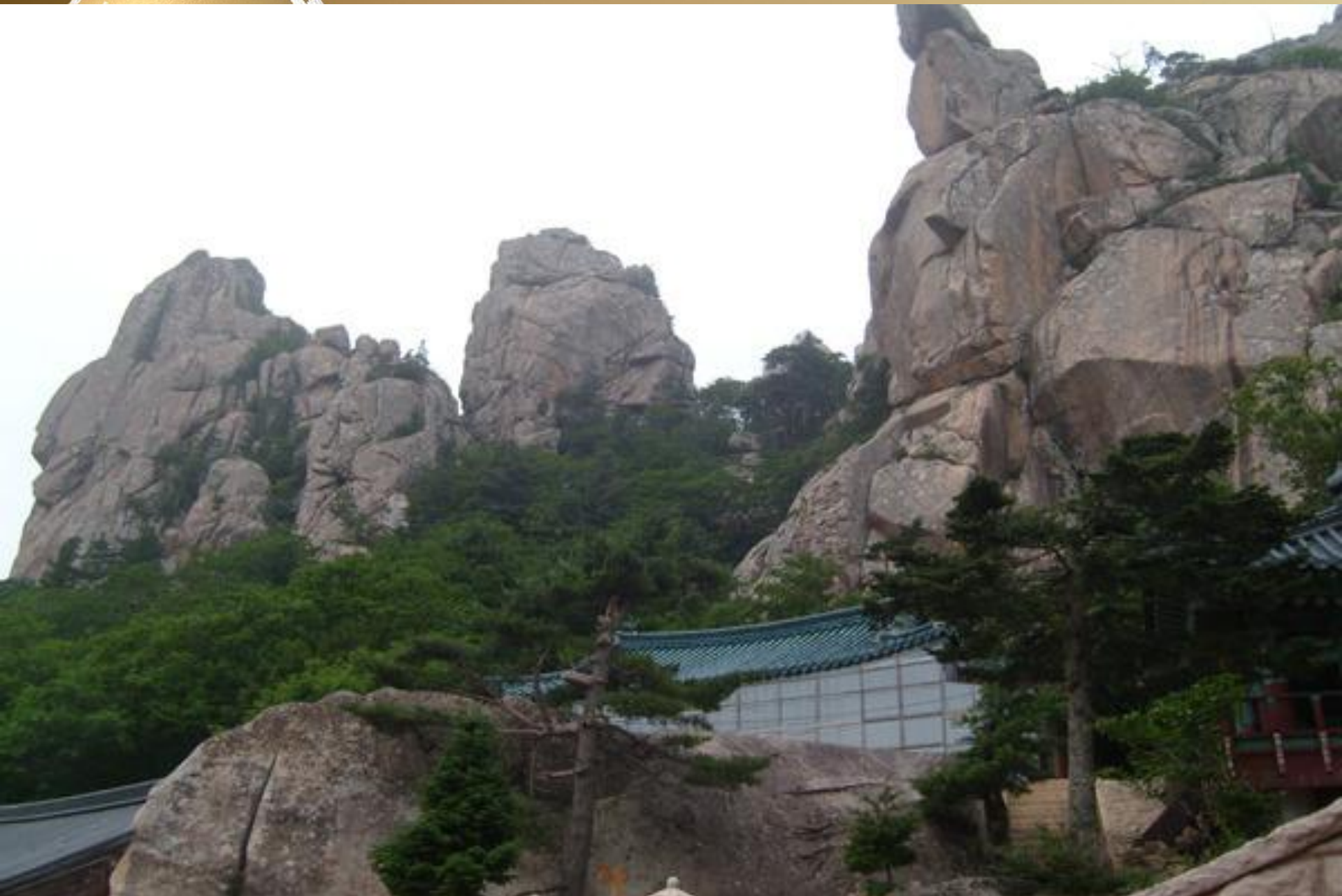


Gneiss

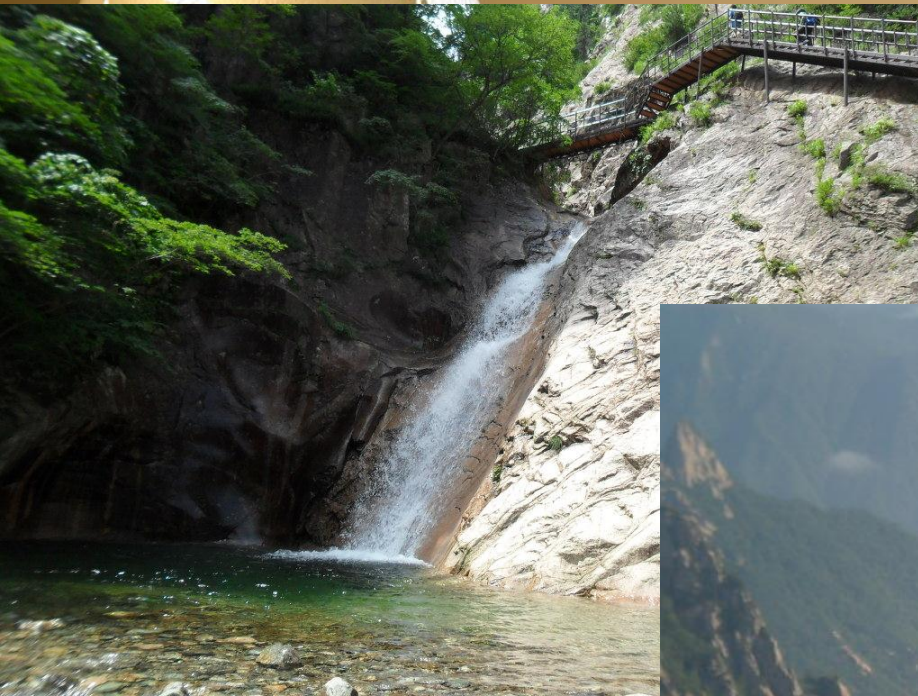
Augen Gneiss



Bongjeongam; small temple, accommodation available



Waterfall(left) and rocky peaks(right)



2011/07/22

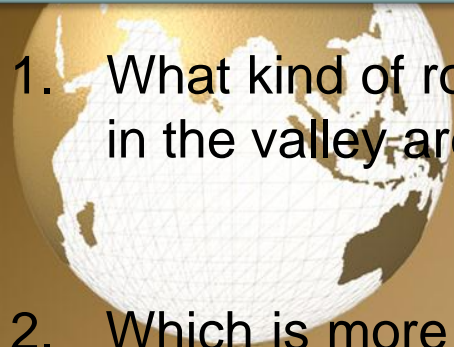
Observatory and mountain cabin(left) located near summit(right) of Seoraksan



Sinheungsa Temple(left) and Buddha Statue(right)



Questionnaire of Seoraksan Field Trip



1. What kind of rocks can be observed along the mountain ridge? and also in the valley area?
2. Which is more metamorphosed, augen gneiss or porphyroblastic gneiss?
3. What is the original rocks of the gneiss before metamorphism?
4. The Seoraksan granites show coarse-grained texture, which indicate the evidence crystallized at deep Earth crust. However all the granites are found on the ground surface easily. Explain the reason.
5. Explain the formational processes the metamorphic rocks and igneous rocks distributed in our field course.